Executive Order 569: An Integrated Climate Change Strategy for the Commonwealth
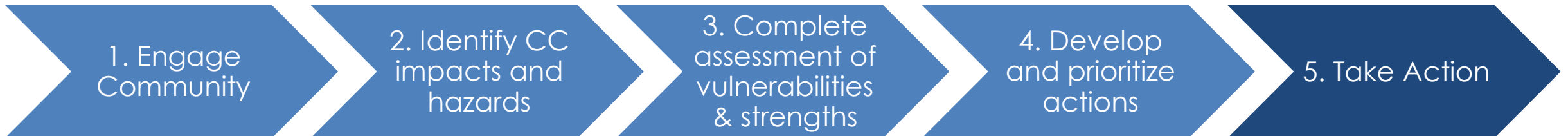

- **Reducing greenhouse gas emissions to combat climate change**

- **Protecting life, property, natural resources and our economy from the impacts of climate change**

Municipal Vulnerability Preparedness (MVP)

State and local partnership to build resiliency to climate change

| 1. Engage Community | 2. Identify CC impacts and hazards | 3. Complete assessment of vulnerabilities & strengths | 4. Develop and prioritize actions | 5. Take Action |

Empowering Communities & Informing Statewide Action

- **Community-led process** that employs local knowledge

- **Accessibility**

- **Partnerships** and leveraging existing efforts

- **Mainstream** climate change

- **Communities** as local innovators

- **Frame** coordinated statewide efforts.
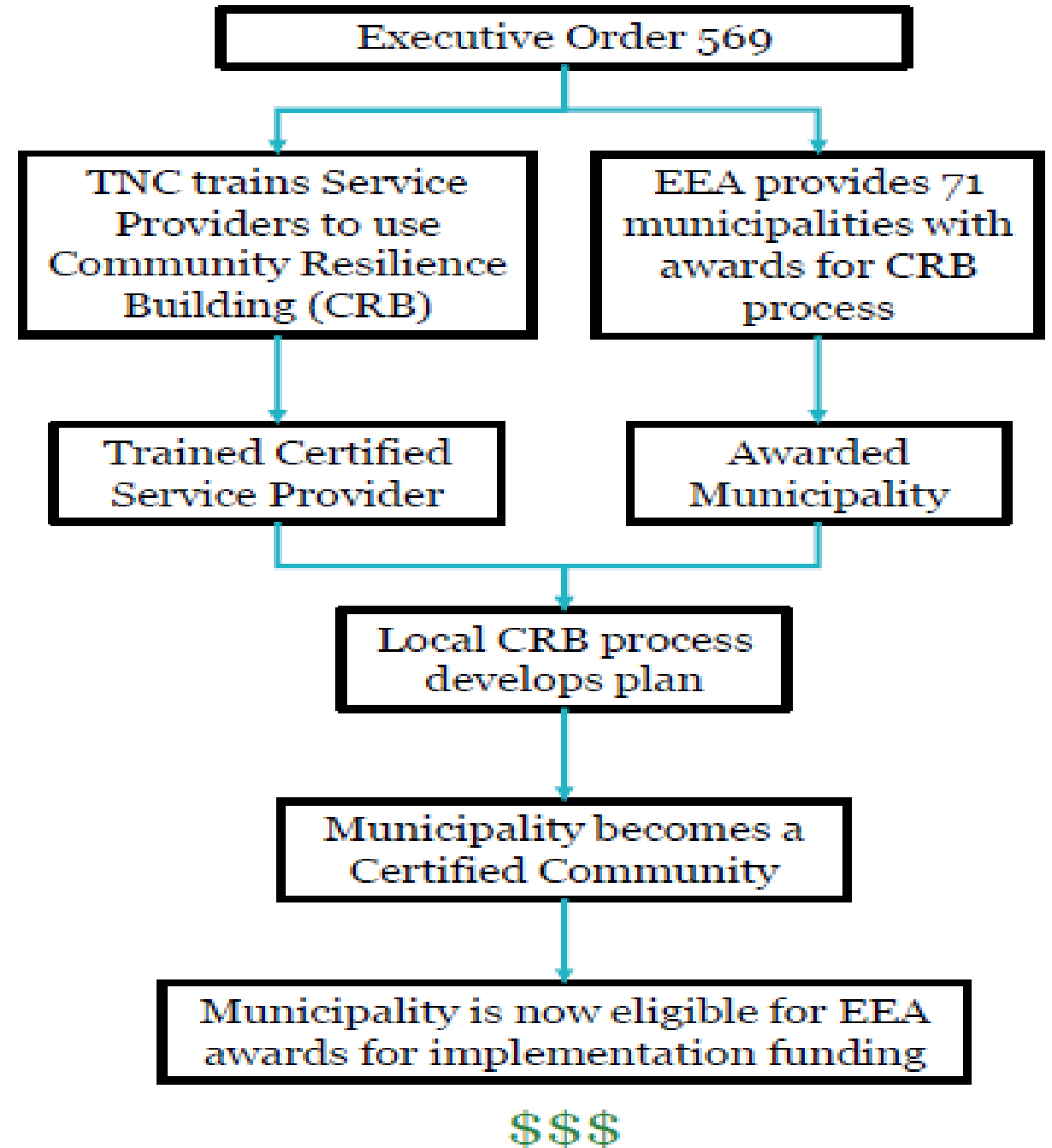
1. Engage Community → 2. Identify CC impacts and hazards → 3. Complete Assessment of Vulnerabilities & Strengths → 4. Develop & Prioritize Actions → 5. Take Action

The MVP Process

Office of the Governor
COMMONWEALTH OF MASSACHUSETTS
State House • Boston, MA 02133
(617) 725-4000

CHARLES D. BAKER
GOVERNOR

KARYN E. POLITO
LIEUTENANT GOVERNOR

By His Excellency
CHARLES D. BAKER
GOVERNOR

EXECUTIVE ORDER NO. 569

ESTABLISHING AN INTEGRATED CLIMATE CHANGE STRATEGY
FOR THE COMMONWEALTH

WHEREAS, climate change presents a serious threat to the environment and the Commonwealth's residents, communities, and economy;

WHEREAS, extreme weather events associated with climate change present a serious threat to public safety, and the lives and property of our residents;

WHEREAS, the Global Warming Solutions Act (the "GWSA") directs the Secretary of Energy and Environmental Affairs and the Department of Environmental Protection to take certain steps to reduce greenhouse gas emissions and prepare for the impacts of climate change, including setting statewide greenhouse gas emission limits for 2020, 2030, 2040 and 2050;

WHEREAS, the statewide greenhouse gas emissions limit for 2020 is 25% below the 1990 level of emissions and the corresponding limit for 2050 is 80% below the 1990 level of emissions, but no interim limits have yet been set for 2030 or 2040;
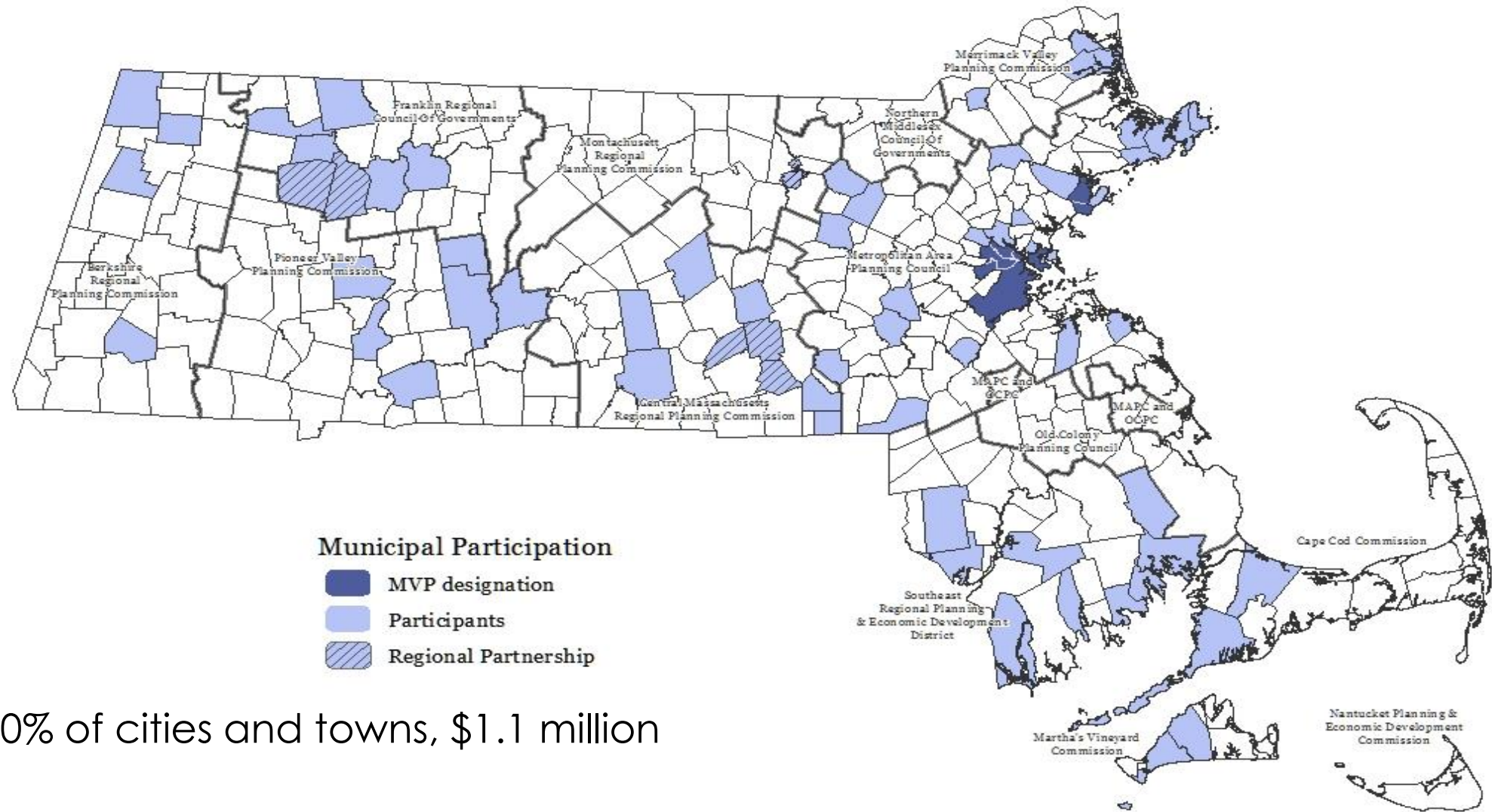
WHEREAS, the Commonwealth can provide leadership by reducing its own emissions from state operations, planning and preparing for impending climate change, and enhancing the resilience of government investments;

WHEREAS, the transportation sector continues to be a significant contributor to greenhouse gas emissions in the Commonwealth, and is the only sector identified through the GWSA with a volumetric increase in greenhouse gas emissions;

WHEREAS, the generation and consumption of energy continues to be a significant contributor to greenhouse gas emissions in the Commonwealth, and there is significant potential

---

Executive Order 569

↓

TNC trains Service Providers to use Community Resilience Building (CRB) | **EEA provides 71 municipalities with awards for CRB process**

↓ | ↓

Trained Certified Service Provider | **Awarded Municipality**

↓

Local CRB process develops plan

↓

Municipality becomes a Certified Community

↓

Municipality is now eligible for EEA awards for implementation funding

$$$

Municipal Vulnerability Preparedness (MVP) Program 2017-2018

Municipal Participation

- ■ MVP designation
- ■ Participants
- ▨ Regional Partnership

20% of cities and towns, $1.1 million

Community Resilience Building
WORKSHOP GUIDE

Community Resilience Building
WORKSHOP GUIDE

✓ **Tried, tested and trusted by over 100 communities...**

✓ **"Anywhere at Any Scale" approach...**
  ➢ Large/Small; Urban/Rural; Wealthy/Disadvantaged
  ➢ Local/Clusters/Region(s); State/Federal Agencies

✓ **Unique community-driven process...**
  ➢ Partners/Stakeholders – Municipalities, Businesses, Academia, NGOs, etc.
  ➢ Wildfire, drought, flooding, heat, hurricanes, tornado, earthquakes, etc.
  ➢ Safety, Health, Sustainability, Equity, etc.

www.**CommunityResilienceBuilding**.org

Overview of the Process (Steps & Tasks)

Ⓐ Prepare for the Workshop
- ① Establish a core team with goals.
- ② Engage stakeholders.
- ③ Prepare materials for workshop.
- ④ Decide on participant arrangements.

Ⓑ Characterize Hazards
- ❶ Identify past, current, and future impacts.
- ❷ Determine the highest-priority hazards.

Ⓒ Identify Community Vulnerabilities and Strengths
- ❶ Identify infrastructural vulnerabilities and strengths.
- ❷ Identify societal vulnerabilities and strengths.
- ❸ Identify environmental vulnerabilities and strengths.

Ⓓ Identify and Prioritize Community Actions
- ❶ Identify and prioritize infrastructural actions.
- ❷ Identify and prioritize societal actions.
- ❸ Identify and prioritize environmental actions.

Ⓔ Determine the Overall Priority Actions
- ❶ Identify highest-priority actions.
- ❷ Further define urgency and timing.

Ⓕ Put It All Together
- ❶ Generate final workshop products.

Ⓖ Move Forward
- ① Continue community outreach and engagement.
- ② Secure additional data and information.
- ③ Inform existing planning and project activities.

DURING WORKSHOP

Community Components

Infrastructural

Societal

Environmental

Provider Tasks: Total Time Estimate = 120-140 hours

1. Meet with Municipal Project Manager to set out project scope, timeline, and compile list of data needs; help with stakeholder mapping; set schedule for workshops

2. Meet with Community Core team 1x to help plan for workshop and collect information

3. Conduct several interviews with key municipal staff

4. Prepare materials for workshop including:
   - Basemaps of town with critical layers
   - Climate change data relevant to the town and summary of potential impacts
   - Relevant planning documents and other existing town information about current hazards
   - Risk matrix

5. Serve as the lead facilitator during workshop and bring 4-5 lower level staff to assist as table facilitators. Designate town leads to be scribes at each table

6. Document all workshop outcomes and prepare final risk matrix and summary reports.

7. Work with town to submit all materials to Commonwealth.

Municipal Staff Commitment

The municipality must provide sufficient staff time (estimated at 80 hours) to assuring completion of this planning exercise and community engagement. Staff time provided by the municipality will include the following activities:

- Procure a state certified MVP provider

- Establish a core team within the town or region to steer the project;

- Coordinate, schedule, send invitations and attend planning meetings and several workshops;

- Work with MVP service provider to identify and engage stakeholders;

- Help coordinate staff interviews to collect information prior to the workshops;

- Help the MVP provider find relevant data and other information useful to conducting the planning exercise

- Provide access to relevant planning documents, budget information, and other information as needed;

- Commit to working to continue municipal outreach and engagement, use the completed plan to inform existing planning and project activities, and secure additional data and information needed to improve the plan.

- Find volunteers to serve as scribes during the sessions

Overview of the Process (Steps & Tasks)

DURING WORKSHOP

(A) Prepare for the Workshop
1. Establish a core team with goals.
2. Engage stakeholders.
3. Prepare materials for workshop.
4. Decide on participant arrangements.

(B) Characterize Hazards
1. Identify past, current, and future impacts.
2. Determine the highest-priority hazards.

(C) Identify Community Vulnerabilities and Strengths
1. Identify infrastructural vulnerabilities and strengths.
2. Identify societal vulnerabilities and strengths.
3. Identify environmental vulnerabilities and strengths.

(D) Identify and Prioritize Community Actions
1. Identify and prioritize infrastructural actions.
2. Identify and prioritize societal actions.
3. Identify and prioritize environmental actions.

(E) Determine the Overall Priority Actions
1. Identify highest-priority actions.
2. Further define urgency and timing.

(F) Put It All Together
1. Generate final workshop products.

(G) Move Forward
1. Continue community outreach and engagement.
2. Secure additional data and information.
3. Inform existing planning and project activities.

➢ Meet with Municipal Project Manager to set out project scope, timeline, and compile list of data needs; help with stakeholder mapping; set schedule for workshops
➢ Meet with Community Core team 1x to help plan for workshop and collect information
➢ Conduct several interviews with key municipal staff
➢ Prepare materials for workshop including:
  • Basemaps of town with critical layers
  • Climate change data relevant to the town and summary of potential impacts
  • Relevant planning documents and other existing town information about current hazards
  • Risk matrix

Overview of the Process (Steps & Tasks)

DURING WORKSHOP

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1. Establish a core team with goals.
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(F) Put It All Together

1. Generate final workshop products.

(G) Move Forward

1. Continue community outreach and engagement.
2. Secure additional data and information.
3. Inform existing planning and project activities.

➢ Serve as the lead facilitator during workshop and bring 4-5 lower level staff to assist as table/small group facilitators. Designate town leads to be scribes at each table.

Overview of the Process (Steps & Tasks)

A Prepare for the Workshop
1. Establish a core team with goals.
2. Engage stakeholders.
3. Prepare materials for workshop.
4. Decide on participant arrangements.

DURING WORKSHOP

B Characterize Hazards
1. Identify past, current, and future impacts.
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1. Identify infrastructural vulnerabilities and strengths.
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E Determine the Overall Priority Actions
1. Identify highest-priority actions.
2. Further define urgency and timing.

F Put It All Together
1. Generate final workshop products.

➢ Document all workshop outcomes and prepare final Risk Matrix and Summary of Findings report.
➢ Work with town to submit all materials to Commonwealth.

G Move Forward
1. Continue community outreach and engagement.
2. Secure additional data and information.
3. Inform existing planning and project activities.

(A) Prepare for the Workshop

Section A Objective: In advance of a Community Resilience Building Workshop, lay groundwork for an effective and collaborative exchange amongst participants and eventual implementation of community-originated actions by a broader array of stakeholders. Initiate this pre-workshop section 2-6 months prior to the actual Workshop – depending on current state of community readiness.

(1) Establish a core team with goals.

Engage and secure consent of leadership (i.e., mayor, commissioner, CEO, or equivalent) to hold Workshop and assign key staff to core team, if appropriate. Establish core team—with clear roles and responsibilities—and organize the implementation of the Community Resilience Building Workshop. Define specific Workshop goals by asking why the community needs to discuss current and future impacts of hazards. In addition, predetermine how the community will use the information and decisions constructed during the Workshop. Finally, develop a reasonable timeline over which all Workshop steps ("before", "during", "after") will be completed. Reconnect with leadership once core team with goals/timeline is secure.

Goal Setting Questions:

- Will the CRB Workshop start a new conversation and identify next steps?
  Or: Will the CRB Workshop help to augment other specific planning needs such as natural hazard mitigation plans, master plans, supply-chain stability assessments, sustainability plans, capital improvements, and/or others?

- Will the CRB Workshop help to identify a list of at-risk neighborhoods, employers/employees, wetlands, and other community features across the entire community?
  Or: Will the CRB Workshop be focused on a single segment of a municipality, department within an agency, individual sector of a business, and/or other?

Core team reviews goals, responsibilities, and timelines before their Community Resilience Building Workshop. © Adam Whelchel

Example Goals:

- The CRB Workshop will be a new initiative to immediately integrate community-derived priorities into a natural hazard mitigation plan and 5-year capital improvement budget.

- The CRB Workshop will augment an existing inter-department directive to meet both resilience and sustainability targets.

- The CRB Workshop will help build resilience by generating greater awareness, prioritization, and ideally launch action plans in five at-risk neighborhoods within three years.

(A) Prepare for the Workshop

(2) **Engage stakeholders (core team).**

Identify stakeholders for Workshop engagement. Invite a wide range of people to participate based on their background, experience, authority, and where they work and live. Consider individuals or entities — across the entire community — affected in the past by hazards and likely to be impacted in the future? Consider individuals or entities that influence, guide, and/or have the authority to make decisions? Generate list of potential stakeholder, identify date for Workshop, develop outreach material if needed, and begin to secure Workshop participants. Allow six week between initial "save the date" invitations and Workshop. Typical Workshop formats include one day (6-8 hours) or two half-days (4 hrs. apiece) ideally spaced two weeks apart.

Stakeholder Guidance:

For ideas, start with this list of potential stakeholders:
http://coast.noaa.gov/data/digitalcoast/pdf/checklist-risk-vulnerability.pdf

Participant affiliation lists from other Workshops available at www.CommunityResilienceBuilding.com.

Get help on how to engage stakeholders from NOAA's *Introduction to Stakeholder Participation*:
http://coast.noaa.gov/data/digitalcoast/pdf/stakeholder-participation.pdf

Committed stakeholders and community leaders engaged in their Community Resilience Building Workshops. © *Adam Whelchel*

(A) Prepare for the Workshop

(3) Prepare materials for workshop (core team).

Gather and synthesize pertinent information related to the impacts of and responses to hazards in the community including:

- Existing maps and online tools, natural hazard mitigation plans, photos, historical information, damage assessments and claims, and people's stories to help the core team prepare.
- Consider sending a pre-workshop Community Characterization Survey to identified participants to efficiently capture core information about how the community currently perceives, assesses, and acts to reduce risks.

An additional approach, if situations and time permit, is a pre-workshop listening session for stakeholders to verbally and visually present their stories, photos, scientific information on hazards and future projections. Information shared can be synthesized with other materials in preparation for Workshop.

Guidance:

A street map supported by aerial images serves as a basemap (3' x 5') during the Workshop upon which participants identify community features (i.e., schools, bridges, wetlands).

Helpful information to show on supporting maps include hazard extent (e.g., flooding, wildfire-prone areas), population density and percent below poverty, current and future land use and zoning, public amenities such as parks and ball fields, protected open space areas, roads, utilities, waterways, land cover, major employers, commercial and industrial areas, and natural resources (e.g., wetlands, floodplains, beaches, forests, coral reefs, etc.).

Review NOAA's *Introduction to Planning and Facilitating Effective Meetings*: https://coast.noaa.gov/digitalcoast/training/effective-meetings.html

Review TNC's Coastal Resilience (www.coastalresilience.org)

Review NOAA's Digital Coast (https://coast.noaa.gov/digitalcoast)
- Search "Coastal Flood Exposure Mapper"
- Search "Sea Level Rise Viewer"

Historic Category-3 Hurricane (1938) with downscaled sea level rise projections.
*Source: The Nature Conservancy's Coastal Resilience Tool (**www.CoastalResilience.org**).*

Pre-workshop support materials are available at **www.CommunityResilienceBuilding.com**, including:

1) Steps/Tasks - timelines and activity lists,
2) Workshop invitation language and flyers,
3) Previous Workshop participant affiliation lists,
4) Community Characterization Survey questions,
5) Sample maps products and tools, and
6) Blank Risk Matrix.

(A) Prepare for the Workshop

(4)

Decide on participant grouping for workshop (core team).

Central to the successful application of the Community Resilience Building Workshop is to open (Section B-1) and close (Section E) the Workshop with large team (all participants) sessions; with small team sessions in between (Section B-2 through Section D). This "large-small-large" team dynamic allows for detailed input from individuals along with a collective synthesis for comprehensive community resilience building. The critical step of assigning participants to small teams depends on attendance with 40-50 participants and 6-8 people per small team (no more than 10) as the ideal. Careful consideration should be directed to diversifying small team membership based on rank, position, roles, responsibilities, and expertise of participants.

Grouping Options for Small Teams:

Single sector – Group participants by like sectors (i.e., infrastructure, emergency management, social services, natural resources, finance) to capture higher levels of detail on select issues. This approach works well if the core team is at a point where very detailed information on risks and actions for a single sector is required. The tradeoff is that a more comprehensive, mixed-sector discovery of actions will need to be synthesized by a large team (Section E) or after the Workshop by the core team (Section F & G).

Mixed sectors – Group participants from diverse sectors together to foster an exchange of different perspectives and actions for community resilience building. This approach helps participants see the connections comprehensively and develop common actions with co-benefits across sectors. In well-attended Workshops, it may be advantageous to have both single- and mixed-sector small teams to get both the detail and development of collaborative, comprehensive actions.

By location – Group participants by geographic location or structural units within an organization (i.e., department, division, agency) to facilitate deeper dialogue on specific aspects of the issue. Small team report-outs are critical here to ensure the various teams can listen for commonalities which ideally result in cross-jurisdictional or multi-organizational actions. This approach works well for Workshops with large and/or complex focus areas with multiple jurisdictions or overlapping governmental/corporate decision-making authority and processes.

Community Resilience Building Workshop participants collaboratively share experiences and create priority actions on the Risk Matrix. *© Adam Whelchel*

(F) Put It All Together

Section F Objective: Develop comprehensive summary products from Community Resilience Building Workshop that will help reduce vulnerability or reinforce strengths resulting in greater community resilience.

Generate final workshop products (core team).

In the aftermath of a **Community Resilience Building Workshop**, the core team must reconvene to generate a summary of findings report to be returned upon completion to participants and broader stakeholders. To achieve this outcome, the core team will need to 1) integrate and generate one master **Risk Matrix** for the community, 2) summarize top hazards and associated impacts (past, current, future), 3) distill the principal vulnerabilities and strengths, ownership, and locations, and 4) and organize a list of actions based on relative priority and urgency with emphasis on the 3-5 "highest-priority" actions. The final report should also list the affiliation of all invited and attending participants. Examples of completed summary of findings reports are available for review at **www.CommunityResilienceBuilding.org**. Public presentations of final findings from the Community Resilience Building Workshop are highly recommended to help increase awareness and receptivity amongst residents, citizens, and/or employees.

Participatory mapping on Base Maps (Sections B & C)

Priority actions with agreement (Sections D & E)
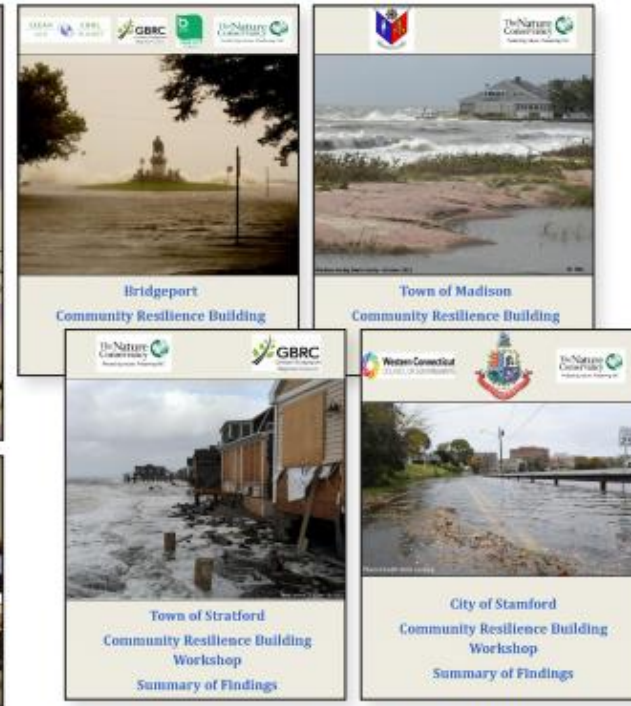
CRB Workshop summary of findings (Section F)

G Moving Forward

Section G Objective: Advance the Community Resilience Building Workshop outcomes ultimately resulting in greater community resilience. Successful approaches and techniques that can help with community resilience building after the Workshop include:

1. Continue community outreach and engagement.
- Develop a strategy to secure formal approval by leadership (council, boards, commissions, etc.) to advance priority actions.
- Establish working groups and leads to enhance momentum for identified priority actions.
- Start conversations with those not involved in developing the **Risk Matrix** and the Community Resilience Building Workshop – focus on impacts where people live and work.
- Share stories of successfully completed actions with others across the community and beyond.
- Pursue and secure funding for priorities and projects.

2. Secure additional data and information.
- Define and establish partnerships to assist with data and information needs.
- Implement data collection to help fill gaps and inform additional assessments.
- Prioritize where to focus more in-depth, data/information gathering efforts.
- Integrate monitoring protocols and procedures into projects and policies to ensure future resilience efforts are continuously re-informed and improving.
- Pursue funding to help with additional analysis and/or projects.

3. Inform existing planning and project activities.
- Identify existing efforts to reduce risks and provide protection to people, property, and the environment. This can provide a foundation on which to build a stronger, more comprehensive, community resilience strategy.
- Inform existing hazard mitigation, comprehensive, capital investment, stormwater, natural resources, housing, and sustainability planning with **Risk Matrix**.
- Examine current policies such as building codes and land use policies and update as needed to accommodate climate-related concerns and/or hazards prioritized in **Risk Matrix**.
- Set priorities and targets for community resilience building over time via clearly defined and agreed upon partnerships.

Community Resilience Building
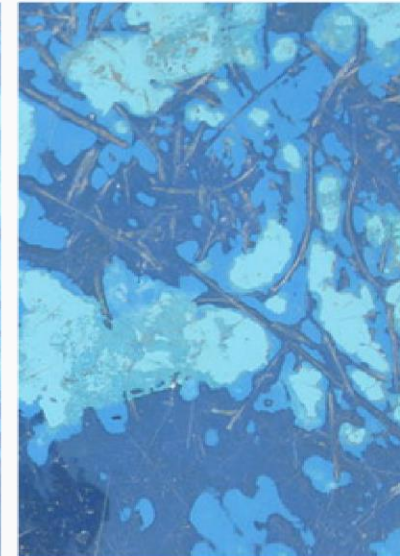
Get on the right path to resilience today...
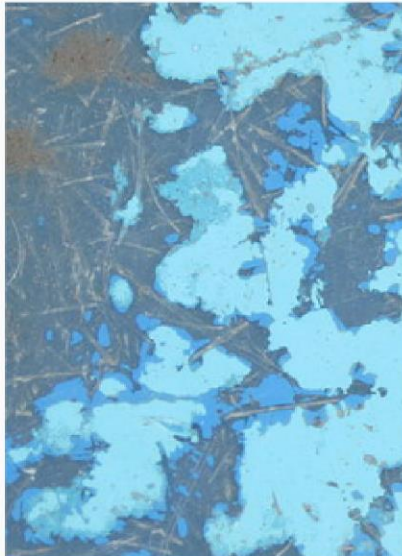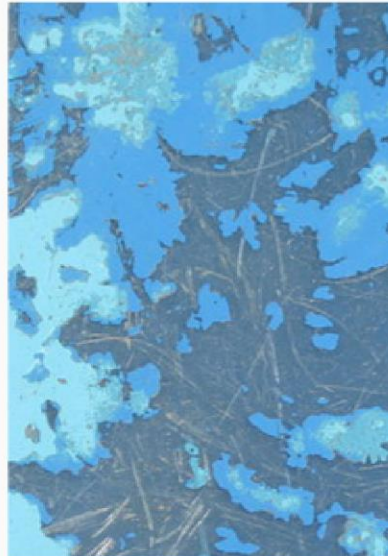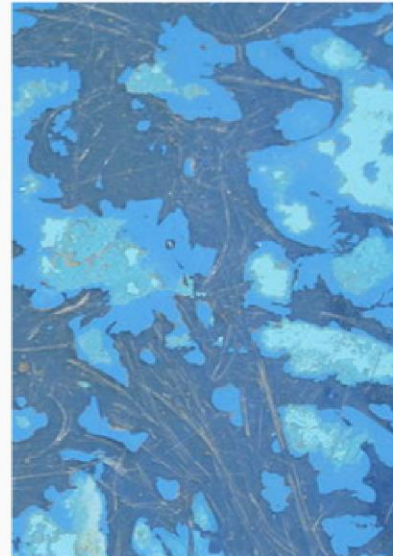
| Origins | The Guide | Reports | Bonus |

The Community Resilience Building Workshop is a unique, "anywhere at any scale", community-driven process, rich with information, experience, and dialogue, where participants identify top hazards, current challenges, strengths, and priority actions to improve community resilience to all natural and climate-related hazards today, and in the future.

www.CommunityResilienceBuilding.com

D Identify and Prioritize Community Actions

1 Identify and prioritize **infrastructural** actions.

Example of a **Risk Matrix** filled in with infrastructural actions, priorities, and level of urgency.

Community Resilience Building Workshop Risk Matrix

Top 4 Hazards (tornado, floods, wildfire, hurricanes, snow/ice, drought, sea level rise, heat wave, etc.)

H-**M**-**L** priority for action over the **S**hort or **L**ong term (and **O**ngoing)
V = Vulnerability **S** = Strength

Features	Location	Ownership	V or S	Coastal Flooding SLR/Storm Surge	Inland Flooding and Rain Events	Ice and Snow	Wind	Priority H - M - L	Time Short Long Ongoing
Infrastructural									
Town Campus	Specific	Town	V	Verify risk from flooding events; Identify alternative locations during peak flooding; Verify maintenance plan annually				H	S
Evacuation Routes - Roads	Town-wide	Town/State	V	Install highly visible signage for evacuation routes; Develop and implement communication program				H	S
Electrical Distribution System	Multiple	CL&P/Town	V	Within floodplain area, establish plan to address protection and long-term relocation of equipment	Upgrade transformers; Maintain power line protection zone (tree trimming)			H	O-L
Dams (inland and coastal)	Multiple	Private	V	Prevent possibility of catastrophic dam failure; Identify and remove dams to minimize downstream flooding due to failure				H	L
Railway and State Bridges	Multiple	Amtrak/State	V	Improve communications between parties; Expand green/gray infrastructure and improve bridge structures; Assess vulnerability and prioritize infrastructure improvement list				M	S
State Roads/Intersections	Town-wide	State/Town	V	Coordinate with DOT, volunteers, public works to improve response; Need signage to warn of flooding risk in critical intersections				M	L
Wharves and Shore Infrastructure	Shore	Town-State-Private	V	Pursue comprehensive shoreline management plan; Establish community dialogue on retaining/relocating infrastructure				L	S
Waste Water Treatment Facility	Specific	Town	V	Conduct alternative siting feasibility study; Relocate to low risk area within next 25 years.				L	L
New Ambulance Center	Specific	Town	S	Continue to support services in budget; Add additional staff and vehicle in next annual cycle					Ongoing
Zoning Regulations (maintain large lot size)	Multiple	Town	S	Current building codes control development in risky areas; Consider additional zoning incentives (TDRs) to reduce risk to residential units					Ongoing

Risk Matrix/Base Map Example

Map Arrows:

Red – Infrastructure
Blue – Societal
Green - Ecological

Risk Matrix/Base Map Example

Waterford, Connecticut (01/11/2012) Eastern Connecticut Risk Assessment Workshop

Vulnerabilities by hazards
Compare vulnerabilities by hazards, indicate
H-M-L priority for action over short or long term.
V = Vulnerability
A = Asset

Risk Martix developed by Ligthouse Consulting & The Nature Conservancy (01/2012)
Hazards (flooding, wind, etc)

Infrastructure vulnerabilities/assets	Location	Ownership	Coastal Flooding	Riverine Flooding	High Winds	Frozen Precipitation	Priority H-M-L	Time S/L term
V Millstone Power Plant	Rt 156	Dominion Power	Cord. & Comm. w/ Dominion/FEMA/DOHS	Same	Same	Same	M	Ongoing

V At-risk neighborhoods	Town wide	Town	Rebuilding requirements (elevation – 2' freeboard)				H	S

|			coastal train or culverts; & bridge; eliminate at-grade crossings	ice cutting along lines				
A Fire House Team Approach (decentralized)	Town Wide	Town						
A New Generator in School								
Societal vulnerabilities/assets								
V Vulnerable Populations	Town Wide	Town	Cord. w/ other Town agencies (community services)				M	Ongoing
V Recreational Facilities (BB Fields; Beaches, etc..)	Town Wide	Town	Emergency Comm. & Cord. at facilities				M	S
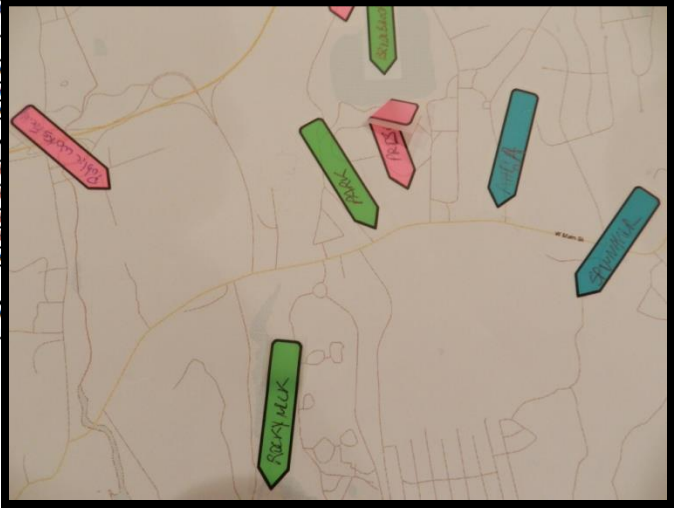
Map Arrows:

Red – Infrastructure
Blue – Societal
Green - Ecological

Community Resilience Building
WORKSHOP GUIDE

8 hours →

Awareness

---Large Group---
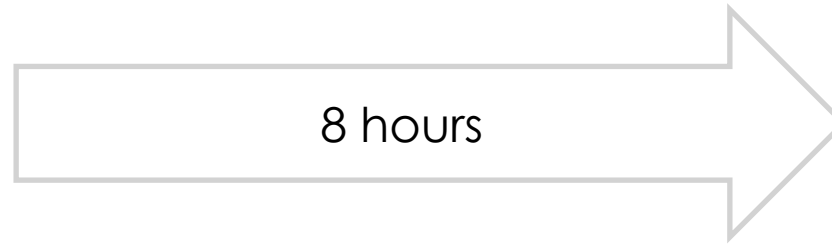
Step E

---Large Group---

Step B　　**Step C**　　**Step D**

---Small Groups---

Team:
Lead Facilitator
Small Group Facilitators
Scribes

1-Day versus 2-Day